

VISIT...

LANZAROTE
Caliente.COM

2 The Integrated Planning and Quality Management System (IPQMS)

2.1 BRIEF OVERVIEW

Studies of costly overruns and failures of over 30 projects in nine countries by an international team of senior scholars and practitioners clearly pointed to the need for a new approach to project planning and management.¹ In every case, the study team found common denominators in the reasons for the many problems encountered. The most critical problem areas were directly related to the fragmented approach to project planning and management. The basic problem is that different groups are normally involved with:

- Project identification and formulation
- Feasibility analysis and appraisal
- Design, including preparation of drawings, specifications, and establishing personnel needs
- Traditional project management, which includes activation, implementation, supervision, and control through completion

The study team found there was no coordination between and among these groups in every project, which results in fragmentation. The roots for this critical problem of fragmentation are found in education and training programs.

The outstanding conclusion from these studies emphasized the need for more effective coordination *and* control of the various tasks throughout the project cycle. The project cycle is not a new concept. It has been used by the World Bank and other international funding agencies for a number of years as a basis for their lending programs. There is general agreement that each project passes through a cycle which, with some variations, is common to all.² However, as the international team determined, the principal need was to focus on the *integrated* project cycle. Thus, the project team developed the IPQMS* as its conceptual framework for the new curriculum because of

* The IPQMS is a further development of the original integrated project planning and management cycle (IPPMC).

the need to systematically integrate the many tasks and procedures to ensure better control and productivity.

The IPQMS is a conceptual tool for observing and analyzing the process of projects in all sectors (Figure 2.1). This integrated matrix has been developed to clarify the major phases and tasks that constitute the project, from planning through implementation, evaluation, and refinement, with the central function of policy making providing focus and direction throughout. The IPQMS may be divided into four phases:

- Planning, appraisal, and design
- Selection, approval, and activation
- Operation, control, and handover
- Evaluation and refinement

Specific tasks may be further identified within these four phases, as illustrated in Figure 2.1.

Figure 2.1 illustrates the relationship among the phases of the project cycle, the tasks within each phase, and the overall dependence on central policy issues. It must be emphasized that the project cycle is an ideal model; not every project will conform exactly to it. However, as mentioned earlier, each project does pass through a cycle consisting of a sequence of phases, and the last phase should produce new project ideas and approaches. Thus, the project cycle is self-renewing, as shown in Figure 2.1. Continual feedback and dependency do exist among the tasks, however. Each task is dependent upon and influenced by the others.

There is a two-way flow of information between those responsible for policy and those responsible for managing each of the project tasks. This feedback to policy makers and management's response is an important part of the integrated project cycle. Decisions on project implementation, although in the hands of the manager on a day-to-day basis, are closely linked to the policy framework within which the project operates. Thus, all tasks within the four phases of the IPQMS are tied together by policies emanating from the various authorities concerned with the project.³

The IPQMS framework emphasizes the interdependent and cyclical nature of projects. However, because each task within the four phases of the cycle is distinct and must be examined as an individual entity, proceeding in an orderly time sequence, the cycle must also reflect this linear progression.

The IPQMS is intended to be a flexible model for analysis and observation. The bond between the myriad activities it encompasses is the authority

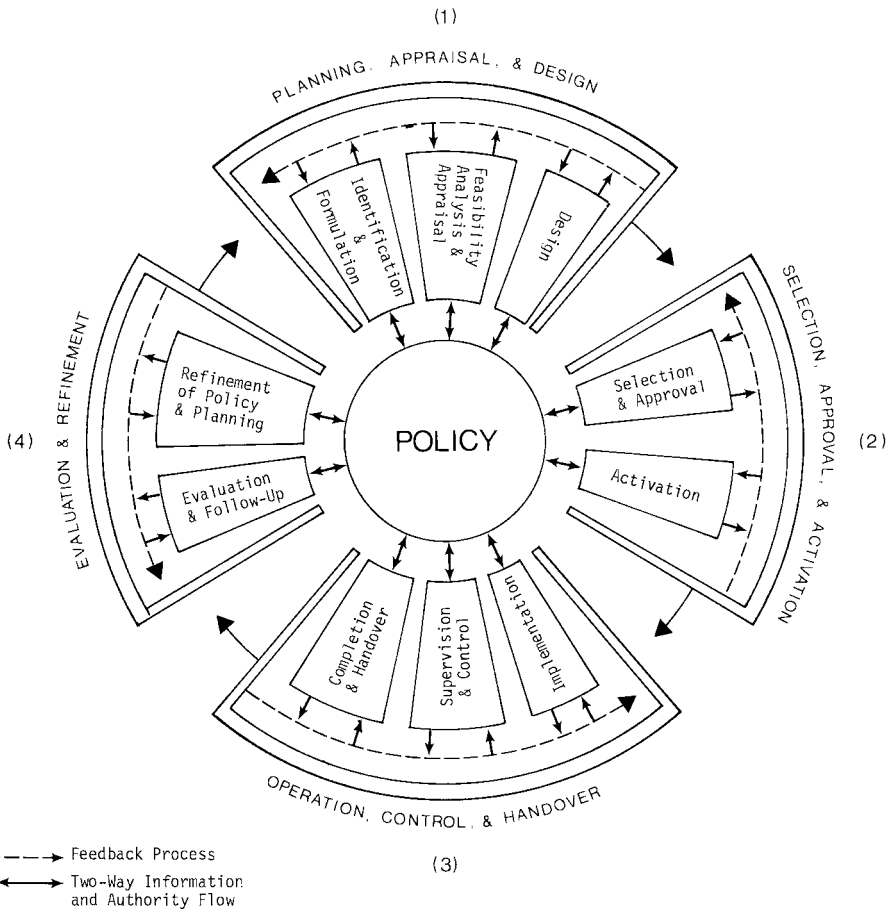


FIGURE 2.1 The four phases of the Integrated Planning and Quality Management System (IPQMS).

relationship of all of the decision makers involved, from top government policy makers down to project foremen. By analyzing these changing power relationships within the framework of the integrated project cycle, a cohesive and readily intelligible overview of the project can be provided. The IPQMS conceptual framework provides the basis for the syllabus of the prototype curriculum.

With this overview, we can proceed to examine each of the four phases and their tasks.

2.2 PHASE 1: PLANNING, APPRAISAL, AND DESIGN

The first phase of the project is planning, appraisal, and design. There are three basic tasks in this phase: (1) identification and formulation of the project, (2) feasibility analysis and appraisal, and (3) design of the project. The first joint task, *identification and formulation*, involves the actual conception or identification of a project, which may occur in several ways. The basic requirements of a country indicate the need for projects to satisfy them. The planning process often identifies a variety of project possibilities for each sector of society. For example, identification of an agricultural project may first require irrigation and transportation projects.

The major sources of projects in developing countries, however, are the government departments or ministries, including central planning agencies. Projects may be identified by political parties or government officials. In this case, the motivation to undertake a project may be political, such as an attempt to gain the support of particular constituents. In some countries, private entrepreneurs or multinational corporations will identify projects that meet the criteria established by the government.

International agencies have their own procedures for identifying projects. The identification process, then, must take into account various needs, preconditions, and policies if the project idea is to proceed to operational reality.

After a project has been identified, its parameters must be defined. This is part of the *formulation* task. The formulation of a project involves the development of a statement in broad terms which shows the objectives and expected results of the project and provides an estimate of the various resources required to achieve them.

The second set of tasks in the first phase, *feasibility analysis and appraisal*, are critical ones which involve two distinct operations. A prerequisite for this set of tasks is the development of preliminary designs for the project. These early designs must be detailed enough so that cost estimates and decisions on various aspects of the project can be made.

Feasibility analysis is the process of determining if the project can be implemented. *Appraisal* is the evaluation of the ability of the project to succeed. Projects will proceed to the feasibility stage only if decision makers find them desirable.

While feasibility analysis and appraisal are being conducted, several critical decisions need to be made. These decisions will determine, first, if the project is capable of achieving its objective within the limits imposed by the decision makers and, second, whether it will proceed. Preliminary esti-

mates of the resources required, and basic decisions about size, location, technology, and administrative needs, must be made.

Feasibility and appraisal should be approached systematically and deliberately. Time spent in researching the feasibility of a project is usually time well spent. Moreover, the findings at this point in the project will be useful during other phases of the project, particularly phase 3.

Determining the feasibility of the project depends on the accuracy of the information received. Even though the final detailed design of the project can be undertaken only after approval has been given, the preliminary designs form the basis of future decisions. Most developing countries have to contend with a shortage of both design and research-development capabilities. The result may be a lack of attention to critical aspects of the project. When decisions have been made on the overall project concept, its dimensions and parameters, it is then possible to determine its feasibility in the terms required by the policy makers and funding agencies.

Some projects may require a pilot study as part of the feasibility process. Pilot studies provide data that enable more meaningful decisions to be made about larger projects. The appraisal process may require a comparative study to determine the merits of one project over another. Although the project identified may be feasible to implement, a comparative study determines whether the resources will be best used in the project or in some other form.

Many governments and international agencies have developed rigid procedures to be followed when their funds are required. While the actual details vary from project to project and from organization to organization, the trend in recent years has been toward more sophisticated and more systematic project-related studies. For example, to receive a recommendation from the United Nations Development Program (UNDP) for industrial projects, prospective borrowers must undertake market analyses that include national trends in production, foreign trade, consumption, and consumer prices, together with details about output type and use, cost of production, and estimated sales. Other agencies have added new dimensions to their studies, such as the impact on the social and cultural life of the community and the environmental and ecological impact of the project.

Numerous components of the project must be dealt with in the feasibility report. Studies can relate to the feasibility of the technical, economic, commercial, financial, administrative/managerial, and organizational aspects. Additional political, social, environmental, and cultural factors that affect the project may also be included. Of great importance here is the need to make an inventory of the present environment in order to assess and manage the impact of the project on change in any of the environmental baseline

factors, such as groundwater contamination and/or air pollution. Various technical alternatives must also be studied to ensure that the suggested approach fulfills project requirements.

Economic studies examine the overall sector into which the project falls and consider how the project fits into this sector and the regional planning framework. Related to economic feasibility studies are commercial studies, which may be necessary to determine the competitiveness of the proposed project. These studies examine the market demand for the output of the project, consider the costs of production, and look at all aspects of the project to determine if it is viable.

Financial studies determine how much capital is required to complete the project. These studies focus on whether the project can sustain its financial obligations, have adequate working capital, and generate enough funds to ensure adequate cash flow to keep the project operational.

Administrative/managerial studies determine the adequacy of personnel to control and direct the project. Studies in this area are not always undertaken, even though all projects would benefit from them. Their objective is to determine whether a project that is economically, financially, and commercially sound can be properly implemented by available managerial and administrative procedures. Many regions and countries suffer from a lack of management and administrative capacity to direct projects. Related to this problem is a lack of ability to ensure that a project can be administered effectively by an appropriate agency or organization. Because administration of a project differs from normal departmental procedures, a careful assessment of the operational methods of existing units is necessary to ensure that a project's unique features can be catered to. Even though a project may be conceived and sponsored by an existing department, the department itself may not be the appropriate body to administer it. This is especially true when the involvement of a large group of outside personnel and agencies is necessary, since existing departmental procedures are often unable to provide the required flexibility.

Once the feasibility studies have been completed, a meaningful appraisal of the project is possible. Policy and decision makers and lending institutions may carry out the appraisal. They satisfy themselves that the project meets the conditions that enable it to proceed. Their concern is to determine whether or not the project is the best means of reaching the objectives they have set. In addition to viewing the project itself, they may consider alternative means of reaching the objective.

Potential lending institutions may undertake their appraisal with a healthy skepticism toward all phases of the project. They attempt to determine if the

project is intrinsically sound and if all the circumstances that surround it are favorable.

The last task within this phase of the integrated project cycle is *design*. As mentioned earlier, preliminary design criteria must be established before project feasibility and appraisal begin. Once it has been determined that the project will continue, the design proceeds. Design is a critical function. It establishes the basic programs, allocates responsibilities, determines activities and resources, and sets down in operational form the areas of priority and functions to be carried out. All inputs relating to projects, including personnel, skills, technical requirements, and so on, must be determined at this point. Environmental factors, social criteria, and procedures must be assessed and included.

The design task also includes the preparation of blueprints and specifications for construction, facilities, and equipment. Operating plans and work schedules are prepared and brought together in a formal implementation plan; contingency plans may also be prepared. Designers must bring together the views of policy and decision makers and technical experts in such a way that the design reflects the inputs of all persons contributing to the project.

2.3 PHASE 2: SELECTION, APPROVAL, AND ACTIVATION

This phase of the project has two major tasks: (1) selection and approval and (2) activation. *Selection* takes place after the project has been accepted by policy makers and funding organizations as meeting the feasibility criteria. At this point, the design function, including the formal implementation plan, has been completed. The project has been well defined, with key elements and inputs clearly identified. The selection of one project over another is made on the basis of several criteria. Policy makers consider the feasibility of the project and the priority of the project area. If a project fulfills a major need or contributes to national or sector goals and is politically desirable, it may be selected over a competing project that is not politically important. Funding agencies, however, have a variety of techniques for determining whether resources will be allocated to a particular project. These techniques may range from cost-benefit to other complex forms of analysis. Overall, however, the policy makers and the funding agency must conclude that the project itself has a priority claim for the resources it requires. Therefore, the selection process is normally competitive.

Project selection requires negotiations to obtain formal *approval* from national authorities, funding agencies, and other contributors. This requires the finalization of funding proposals, agreements, and contract documents, including tenders and other contracts and the introduction by the government or some other organization of appropriate regulations.

Activation of the program involves the coordination and allocation of resources to make the project operational. This is a complex process in which the project manager brings together a project team, which may include professionals, technicians, and resource personnel. Other contributions to the project may come from other groups, such as consultants, contractors, suppliers, and policy makers in other agencies. The outside inputs must be coordinated with the work of the project team. Responsibility and authority for executing the project must be assigned at this point. This includes the granting of authority to make decisions in areas relating to personnel, legal, financial, organizational, procurement, and administrative matters.

The activation task must ensure that planning for all phases is undertaken so that delays in vital inputs do not occur. Organizational and administrative procedures, together with feedback and responses to policy makers' decisions, will have an important bearing on implementation. Concern for detail and proper planning during activation can save a great deal of time and resources during later phases of the project. At this point, the actual work of the project is about to begin.

2.4 PHASE 3: OPERATION, CONTROL, AND HANDOVER

Looking at the development project from the outside, the uninitiated observer might mistake this most visible phase for the entire project. As has been indicated, phase 3 in fact makes up only a small part of the integrated project cycle. This phase has three sets of tasks: (1) implementation, (2) supervision, and (3) completion and handover.

Implementation involves the allocation of tasks to groups within the project organization. It is based on procedures set down during the two earlier phases. At this point, a final review of the project design and timetable is undertaken, and any necessary changes or adjustments are included. Decisions about the procurement of equipment, resources, and manpower also need to be made. Schedules and time frames need to be established, and efficient feedback, communication, and other management information sys-

tems must be set up. The responsibility for implementation rests with the project manager. This person must work with policy makers, authorities, and organizations related to the project, as well as with the policy makers controlling it. His task is a complex one, requiring him to steer the project through many obstacles.

The second set of tasks in phase 3 is *supervision and control*. Appropriate procedures must be activated to provide feedback to both the policy makers and the project manager. Control procedures must identify and isolate problem areas; because of the limited time span of a project, fast action is necessary if costly delays are to be avoided. At this point, specific management tools, such as the critical path method (CPM), program review and evaluation techniques (PERT), and other forms of network analysis are particularly useful. These control and supervision techniques break down a project into detailed activities and establish the interrelationships between and among them. This allows the project manager to organize the project into manageable components, to coordinate all activities, and to set a time-sequence schedule for project implementation. Although using such techniques means taking more time prior to implementation, it is time well spent. Not only will these techniques give the project internal coherence, they will also save implementation time by isolating any problems to the appropriate project component.

In addition to providing internal control, those funding the project maintain an independent monitoring and control system. The project manager must therefore meet control criteria established by either the government or another controlling agency, or perhaps by the funding institution. This may involve using specified procedures, such as international competitive bidding, for supply contracts. Formal procedures are established by many international organizations for the procurement and control of resources.

Whatever supervision and control techniques are used, they must take into account the changing patterns that occur during the life of the project. These may include changes in policy making and political organizations, difficulties with procurement, and poor performance by project team members and contractors. In many cases, the overall project design will need to be reviewed. Many technicians are involved in the supervision and control processes, and adequate information flow in all directions — from the project manager and from those within his organization with special responsibilities — is essential if these procedures are to be effective. As part of supervision and control, any problems relating to environmental factors must also be identified and appropriate action taken.

Control procedures are useful only if action is taken to correct any deviation. It should also be noted that both personnel and input patterns change as the project proceeds through its four phases. As work on some tasks is completed, other personnel, experts, and contractors move in to begin new tasks. Personnel must adjust to their new environment, and procedures need to be reviewed and updated to meet the changing situation.

Project *completion* prepares the project for phasing out and *handover* to another form of administration. These are the third set of tasks in this phase. Project completion consists of scaling down and dismantling the project organization. It also involves the transfer of project personnel to other areas of operation. Assets and other facilities, including equipment and technology, may not be required by the operational project. Provisions for their transfer must be made, since it is not always possible to have an automatic transition from the development to the operational stage.

Completion may take place over a considerable period. As various parts of a project are completed, however, they may be taken over by a new organization, and handover may therefore be accomplished piecemeal. It is essential that development resource linkages between scaled-down projects and projects in the elementary stages of implementation be planned systematically to ensure optimal use of limited resources, particularly in broad development programs. The new project, when operational, will have an effect on other aspects within the sector. As the project becomes operational, the new controlling organization must have the skills, personnel, and technical backup required. Key personnel working in the development stage will often transfer over to the new controlling organization.

In cases where technical, financial, political, or other factors prevent projects from being completed according to the original terms, handover and termination procedures may have to be implemented at an earlier stage. This may involve considerable loss as far as the project is concerned. In this situation, the objective should be to liquidate the project in a way that will obtain the most benefit.

As a project nears completion, special reporting systems should be set up so that full information on the project is available. Completion reports should be prepared for various authorities, including funding organizations and policy makers.

The actual handover of the project's operation involves finalization of contracts, termination of loan facilities, and so on. It also includes the transfer of the project's activity and resources to the new administration. This is a critical task. While the development of the project can be viewed initially as a creative task, once the project is completed, it must be viewed as a long-term operational program.

2.5 PHASE 4: EVALUATION AND REFINEMENT

The final phase of the project is the evaluation and refinement of policy and planning factors. The first task is *evaluation and follow-up*. While it is possible to evaluate project results immediately, actual benefits — both anticipated and unanticipated — together with their side effects, may not become apparent until the project has been operating for some time. Evaluation thus needs to cover several time periods. Evaluation normally includes a retrospective examination of the project in attaining its intended goals within both the timetable and the budget. However, experience clearly demonstrates that it is necessary to consider evaluation as an ongoing process integrated with each phase of IPQMS. For example, evaluation procedures must be designed to analyze and propose solutions to problems that may arise during the tasks of activation, implementation, supervision, and control. Ongoing evaluation, which includes retrospective evaluation, should result in a careful documentation of experiences which can provide both insights and lessons for improving project planning and project management in the near future.

Evaluation of a project can take several forms. These include evaluation by those responsible for implementation and by others with an interest in the project, including funding organizations and contractors. Those who are funding the project will undertake a thorough investigation of its financial aspects, including an effectiveness study of goal attainment. The agency responsible for the project will determine whether its goals have been attained and whether the expected impact on a sector or on national development will be achieved. The studies should consider, in addition to the project's impact on the target group, its influence on the political, social, cultural, and environmental factors relating to the project. An exhaustive evaluation of each phase, to determine its contribution to the project in terms of the budget, timetable, and other factors, is most desirable. In most cases, however, the project is evaluated as a whole, with little effort made to analyze each phase or each task separately.

International agencies, such as the World Bank and the United Nations, have their own procedures for evaluating projects. These may be useful to policy makers, since they provide the opportunity for comparative analysis with similar projects.

Related to, and often arising from, the evaluation of a project is the need for follow-up. Follow-up activities may vary from determining how unmet needs can be satisfied to action on project tasks not properly fulfilled. The piggyback or follow-up projects mentioned earlier may come into play at this point. For a project to achieve its full objective, smaller or related projects

may need to be implemented almost immediately. There is then a clear need to relate follow-up action closely to project evaluation. Follow-up action is one aspect of the project manager's role which may involve considerably more commitment than he or she initially envisages. If follow-up action makes the difference between the project's being fully or only partially operational, it is wise to undertake these activities as quickly as possible. Aspects arising from the follow-up procedures may be useful in the future. If the project is successful, guidelines can be set down for the project to be repeated in another setting.

The second and last task is *refinement* of policy and planning. Policy makers and managers will need to refine their procedures in the light of each completed project. Experiences and lessons learned should be the basis on which planning and policy tasks are reviewed. As the essential controlling force, policy procedures must be continually updated to meet future challenges. Planning must also be able to meet new demands and situations. Refinement of these procedures is an important contribution that the project can make to future development programs.

The IPQMS is a flexible model for all phases of projects from conception to completion. The force unifying all of the phases and tasks is the power and authority vested in various policy makers, ranging from top government and political decision makers to those in charge of one aspect of the project. The project managers, the staff, and outside contributors such as consultants or contractors are bound by and exist within the framework of policy decisions. Analysis of these changing relationships through the IPQMS model can provide a comprehensive overview of a development project. It is also useful for policy makers in providing guidelines for addressing policy issues as a basis for more viable policy formulation and related decision making.

It is significant that the IPQMS conceptual framework was developed as the basis of a new and dynamic approach to planning and management because of past experience with the problems of poor planning and management, resulting in the waste of enormous human and capital resources in projects from all sectors. The viability and effectiveness of this system in designing and implementing new curriculum materials for educating and training project planners and project managers have been established. In addition, the IPQMS has been shown to provide an effective conceptual framework in four sorely neglected areas: (1) encouraging long overdue *teamwork* among planners, designers, contractors, and owners of projects;

(2) satisfying the need for accurate information flows between and among these groups to ensure safe, cost-effective projects; (3) creation of data bases in each sector through carefully documented case histories of projects; and (4) the most difficult task of all — application of lessons learned from the case histories to refinement of policies and planning to improve productivity and quality of new projects.

Thus, the IPQMS methodology, when properly introduced and implemented, ensures *accountability*, *cost effectiveness*, and *quality* in all programs and projects. The IPQMS can be used for projects and programs in all sectors.

Subsequent applications of the IPQMS by the authors to the Trans-Alaska Pipeline System ([Chapter 5](#)) and the Washington State Nuclear Power Plants ([Chapter 7](#)) demonstrated the need for more attention to the feasibility studies.

2.6 FEASIBILITY STUDIES

As the IPQMS figure shows ([Figure 2.1](#)), planning emanates from a policy to identify and formulate programs and projects for specific needs or objectives. In most cases, the project must satisfy economic and social needs. Of course, in the military, the project must satisfy a defense need. In all cases, experience shows projects follow a similar process from inception to completion, and the most important task in the planning phase is the determination of the feasibility of implementation. Thus, feasibility studies and analyses or appraisal form the critical juncture in the IPQMS. Unfortunately, policies usually do not stress the importance of planning to the future success (or failure) of projects.

Feasibility studies require a preliminary design which is developed from the formulation task. Formulation defines the parameters of the project and estimates of the various resources required to achieve the objectives. This makes it possible to develop one or more preliminary designs to conduct a comprehensive feasibility analysis.

A complete feasibility analysis of a project must cover six important study areas: (1) technical, including manpower and technological requirements; (2) economic justification, such as the cost and benefits; (3) administrative and managerial, including external linkages and internal organization; (4) environmental, including present baseline data and impact on those

data; (5) social and political, including demographic data and social needs; and (6) financial for funding needs/sources. Each of these six studies should be conducted in the context of five interrelated questions:

- Is the proposed project responsive to urgent present or anticipated social and economic needs?
- Will the project as planned adequately serve or fulfill the intended purposes without detriment to the environment?
- Will the benefits of the project to both society and the economy be justified by the costs?
- Should various technical alternatives be studied to optimize or maximize cost effectiveness of the project without sacrificing the quality or function of the project?
- Do the feasibility studies provide sufficient baseline criteria and measures to establish a checklist for subsequent project implementation, control, and evaluation?

Well-prepared feasibility studies and analyses examine and question every aspect of the preliminary design within the context of the actual project environment. They determine whether a project can be satisfactorily carried out with the financial, technical, human, material, and organizational resources available. Thus, together with design, feasibility and appraisal function as the interface between conception and reality. They link the planning set of project tasks — identification, formulation, and preliminary design — with the action-oriented set of tasks — selection and approval, activation, implementation, handover, and evaluation.

In providing this link, feasibility and appraisal serve several other crucial functions. First, by examining project goals and by questioning all assumptions, they provide a framework to reformulate the preliminary design into the most appropriate design. Second, feasibility and appraisal help guide the implementation of the project. Not only do they point out potential trouble spots, they also discuss the use of possible contingency plans. Finally, a complete feasibility study includes criteria and baseline measures to evaluate the project, providing the framework both to monitor the project during implementation and to evaluate its overall success and completion. Thus, guidelines and checklists can be prepared to ensure both cost effectiveness and quality. In fact, the significance of feasibility studies is setting up guidelines and checklists for subsequent tasks in the IPQMS!

In the field of project management, the bulk of literature on feasibility and appraisal deals almost exclusively with economic analysis (including

market studies, which are not always applicable) and technical studies, with particular emphasis on engineering criteria. In practice, however, feasibility analysis and appraisal incorporate a much wider range of factors than these, including such areas as management and personnel considerations, environmental impact, and sociopolitical repercussions, together with their often complex and overlapping relationships.

In summary, poor project planning results in many problems, especially in design and implementation. In particular, lack of adequate attention to the feasibility studies has been found to be directly responsible for costly budget overruns and structural collapses. Classic examples of the impact of poor planning on costly project results are found in the IPQMS case history chapters of the Trans-Alaska Pipeline System ([Chapter 5](#)) and the Washington State Nuclear Power Plants ([Chapter 7](#)).

The six types of feasibility studies are summarized in matrix form in [Table 2.1](#). The sequence in which these studies are conducted may vary from project to project, with the exception of the technical studies, which are needed to provide vital information for the economic, environmental, and social studies.

The factors to be considered in each study are drawn from agriculture, industrial, public works, and social sectors. Within the matrix, the general terms of each feasibility study are translated into specific interrelated questions the study must ask and answer. Key questions are included in the tabulation.

TABLE 2.1
Feasibility Study Checklist

Technical	
A. Site Data	Is there an adequate choice of available technologies for alternative design purposes considering physical layout, engineering design, and availability of raw materials?
Geology and soil conditions	
Drainage characteristics	
Climate conditions	
Water supply	
Power and transportation	Do the alternative designs meet relevant building codes?
B. Choice of available technologies	
Equipment and machinery	
Manufacturing process	
Spare parts	What are the costs of constructing and operating project facilities (and services), including machinery, equipment, and spare parts as appropriate?
C. Design	
Layout	
Engineering requirements	
Construction materials	What are the manpower requirements, from professional to labor, and are they locally available?
D. Manpower	
Professional	
Technician	
Labor	
Economic	
A. Demand	Is the project responsive to an urgent present of anticipated economic and social need?
Domestic	
Export	Will the project's planned economic outputs adequately serve the intended purpose?
B. Supply	
Domestic	Will the services proposed to be performed through the project and the benefits produced by the project justify its cost?
Import	
C. Marketing program	
D. Employment impact	
E. Raw material needs	
Domestic	
Import	
F. Cost-benefits	

TABLE 2.1 (CONTINUED)

Administrative/Managerial	
A. Internal organization	Will the internal organization proposed to implement the project be comprehensive enough to provide the necessary leadership and unified control?
Structure	
Authority	
Lines of communication	
Flexibility	Who will have complete responsibility and accountability for successful completion of the project?
B. External linkages	
Government support	
Government regulations	
Funding (appropriations)	Are there adequate personnel with the necessary skills for implementation of all project activities?
C. Personnel	
Needs/capabilities	
Position descriptions	
Local vs. foreign	Are internal lines of communication established and lines of authority clearly defined?
Policies	
D. Management	
Management of project	
Control techniques	
Scheduling	
Environmental	
A. Physical/chemical	Is the environment suitable for the success of the project?
Water	
Land	
Air	
Noise	What will be the project's impact on the environment, considering both short-term and long-term effects on water supply systems, wildlife, plants, soil erosion, and quality of air?
B. Ecological	
Species and population	
Habitats and communities	
Ecosystems	
C. Esthetic	
Land, air, and water	
Biota	
Man-made objects	
Overall composition	
D. Social	
Individual well-being	
Social interactions	
Community well-being	

TABLE 2.1 (CONTINUED)

Social/Political	
A. Social impact	What is the project's likely social impact?
Culture and life-style	
Demography	
B. Political impact	What is the project's likely political
Equity	impact?
Social justice	
Political organization	
C. Community resistance	What social factors in the project
	environment will hinder or aid the
	project in achieving its goals?
D. Institutional resistance	What political factors in the project
Legal constraints	environment will hinder or aid the
Stability of political support	project in achieving its goals?
Financial	
A. Project design and implementation	What are the magnitudes of the capital
	and operating costs?
B. Cash flow studies, profitability	What are the sources of funds and draw-
External	down schedules, and are they sufficient
Domestic	to cover costs of activities and
	implementation?
C. Source of funding	What is the projected cash flow of the
	project? To what extent is necessary
	borrowing scheduled to meet running
	deficits at activation?
D. Adequacy of funds	Is there an adequate accounting system to
	regularly provide balance sheets, cash
	flow statements, debt servicing
	schedules, and other financial reports?
	What are the provisions for project
	completion investment and other means
	of recovery investment and operating
	costs?

REFERENCES

1. Goodman, Louis J. and Love, Ralph N., Eds. *Project Planning and Management: An Integrated Approach*. New York: Pergamon Press, 1980.
2. Baum, Warren C. The World Bank Project Cycle. *Finance and Development*. Washington, D.C., December 1978.
3. Goodman, Louis J. *Project Planning and Management: An Integrated System for Improving Productivity*. New York: Van Nostrand Reinhold, 1988.

ADDITIONAL REFERENCES

1. United Nations. Second United Nations Development Decade: A System of Overall Review and Appraisal of the Objectives and Policies of the International Development Strategy. New York: United Nations, 1971.
2. See, for example, What Now, Another Development — The Dag Hammarskjold Report. *Development Dialogue*, Special Issue. The Netherlands: Dag Hammarskjold Foundation, July 1975.
3. Goodman, Louis J., et al. Summary Report: Planning Conference for Training of Trainers Seminar on Use of IPQMS in Public Works Projects. Honolulu: East-West Center, Centerwide Programs, 1982.
4. Business Roundtable. More Construction for the Money. *Summary Report of the Construction Industry Cost Effectiveness Project*. New York: Business Roundtable, 1983.